



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/798,011

03/10/2004

Christoph D. Karp

134-US

6097

32763

7590

02/26/2008

NANOSTREAM, INC.

C/O INTELLECTUAL PROPERTY/TECHNOLOGY LAW

PO BOX 14329

RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

PATEL, TAYAN B

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

02/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/798,011

Applicant(s)

KARP ET AL.

Examiner

TAYAN PATEL

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) 12-16 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 3/10/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11, drawn to an apparatus, classified in class 204, subclass 451.
 - II. Claims 12-16, drawn to method, classified in class 204, subclass 450.
2. The inventions are independent or distinct, each from the other because:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the process can be used to practice another and materially different process, particularly one with a polymer layer of polypropylene.
3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Gustafson on 13 February 2008 a provisional election was made **with traverse** to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

IDS

The information disclosure statement filed 10 March 2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because Citations C13 and C24 do not provide dates of publication. It has been placed in the application file, but the items that have been lined through have not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al (US 2003/0036206) in view of Sandell (US 2004/0171170).

Regarding claim 1, Chien describes a microfluidic device with enhanced detection systems comprising: a plurality of device layers, 502, 504, 506, of operational fluidic structures; and a channel collapse detection structure, 510, defined in the middle layer of the plurality of device layers (See figures 5a-c; See also page 6-7, para 47). Chien does not expressly describe the channel collapse detection structure not in fluid communication with any operational microfluidic structure of the plurality of operational microfluidic structures.

Sandell describes a microfluidic device with channels (See figure 3) wherein there is no fluid communication between the chambers/channels and other chambers, 12, in order to provide homogeneity among channels (See figures 3a-c; See also page 7-8, para 54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the no-fluid communication chambers in Sandell in the apparatus comprising a detection structure in Chien in order to provide homogeneity among channels.

Regarding claim 5, Chien et al describes the layers as stenciled. See figure 3b – layered

8. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al (US 2003/0036206) in view of Sandell (US 2004/0171170) as applied to claim 1 and further in view of Kopf-Sill et al (US 6186660).

Regarding claims 2-4, Chien describes a microfluidic device with a linear detector channel (See figure 5a), but modified Chien et al does not expressly describe the channel collapse detection structure having a variable width; plurality of channels with different widths; and an open well.

Kopf-Sill et al describes a microfluidic device (See abstract) wherein the chamber body has a plurality of microscale channels having a varied depth with an open end/well in order to provide control or maintenance of the electrical resistance of the channels (See figure 5a-b; See column 13, lines 20-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the channel dimensions in Kopf-Sill et al in the apparatus of modified Chien et al in order to provide control or maintenance of the electrical resistance of the channels.

9. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al (US 2003/0036206) in view of Sandell (US 2004/0171170) as applied to claim 1 and further in view Chow (7247274)

Regarding claims 6-10, Chien describes a microfluidic device (See abstract) but modified Chien does not describe the layers comprising a polymeric material; an adhesiveless polymer layer, a vinyl-based polymer, or polypropylene.

Chow describes a microfluidic device (See abstract) wherein the layers of the device comprise polymeric coatings such as polypropylene or polyethylene (a polyolefin) (both have characteristically adhesiveless properties) in order to provide an appropriate material catering to the assay being performed (see column 6, lines 49-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the polymeric coating/layers in Chow in the apparatus of modified Chien et al in order to provide an appropriate material catering to the assay being performed.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chien et al (US 2003/0036206) in view of Sandell (US 2004/0171170) as applied to claim 1 and further in view of Kopf-Sill et al (US 6358387).

Regarding claim 11, Chien further describes a microfluidic structure (see abstract) and detector, 310 (See pages 6-7, para 47) but modified Chien et al does not expressly describe an illumination source and a detector positioned direct a signal.

Kopf-Sill et al describes a microfluidic system (See abstract) wherein an excitations source, 610, and a detector array, 620, wherein the source provides a beam, 612 (all part of detection system 600) (See figure 13; See also column 16, lines 46-67) in order to provide optical analytic assays and applications for microfluidic devices and systems (see column 16, lines 33-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the source and detector in Kopf-Sill et al in the apparatus of modified Chien et al in order to provide optical analytic assays and applications for microfluidic devices and systems.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAYAN PATEL whose telephone number is (571)272-9806. The examiner can normally be reached on Monday-Thursday, 8 AM-6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tayan Patel, Esq./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795